Appendix E - Dialup Eudora

Introduction

The Dialup connection method is only for users with a Unix shell account. Most users have SLIP, PPP, or direct network connections and can use the Winsock connection method.

Eudora is capable of dialing into systems such as Cisco and Annex terminal servers and UNIX and VMS systems for the purposes of sending and receiving mail messages and making Ph and Finger inquiries. Dialup Eudora utilizes a serial connection that relies on error correcting modems and proper modem and serial port configurations to create a reliable link. This facility is not to be confused with dialup connections such as SLIP and PPP, which provide reliable network connections.

This appendix outlines the IBM PC/Modem and dialup connection requirements for establishing a serial dialup link between Eudora and your mail server. It includes descriptions of the dialup files Eudora runs when establishing this connection, along with instructions for creating your own dialup files by modifying the default files installed with the Eudora software. These instructions assume you are familiar with a text editor, your PC, your modem equipment, and your Internet service provider and/or POP/SMTP hosts.

Note: It is recommended that one person create the dialup files for Eudora and then redistribute the customized files to other users at your site.

IBM PC/Modem Requirements

To use Eudora over a dialup connection, you should have a modem which supports the Microcom Networking Protocol version 4 (MNP4) or the Link Access Protocol for Modems (V.42). If you are using an external modem you must have a straight through cable (with a minimum of 8 signals for TX, RX, RTS, CTS, DCD, DTR, DSR, and GND). A communications card with 16550 UARTS is also recommended for communication speeds over 9600 baud.

Dialup Connection Requirements

Eudora needs a "transparent" and "reliable" connection to your POP, SMTP, and other servers.

Transparent means primarily two things:

1. Characters Eudora sends should NOT be echoed back to Eudora. Most systems do echo characters, so something special may need to be done to achieve this (see the "Echo Canceling" section).

2. You must pay close attention to how carnage returns are treated. Telnet programs routinely translate carriage returns into carnage return (cr)/ linefeed (if) pairs. For this reason, Eudora processes cr/lf pairs to plain carnage returns by default. If your system does not translate carriage returns to cr/lf pairs, or you are running srialpop to establish an echoless session, Eudora's cr/lf processing must be disabled. This can be done by entering the "set CRLFProcessing=O" command in the DEFAULT.NAV file or by unchecking the CRLF Processing option in the Options dialog (Dialup).

Reliable means that the modem you are using supports flow control (hardware RTS/CTS is recommended) and either MNP4 or V.42 for a reliable modem to modem connection.

Dialup Files

Eudora uses a rudimentary command language stored in specific text files to tell it how to dial into and back out of the mail server. These text files are called "dialup" files. The dialup files are placed in a Scripts directory within your Eudora directory when you install Eudora. You select which modem and navigation (Service provider) file to use in the Options dialog (Dialup). However, if your modem and/or service provider are not supported, you should use the Default files. These files must then be modified to work with your modem/service provider, as described in the "Creating Your Own Dialup Files" section.

There are four dialup files associated with Eudora. The first file (DEFAULT.MOD) contains the modem configuration commands; the second file (DEFAULT.NAV) contains the dialing and navigation commands along with the appropriate telnet command (and the srialpop command, if necessary); the third file (DEFAULT.MID) contains the prompt locating commands; and the fourth file (DEFAULT.END) is used to hangup the modem. The first three dialup files

must exist or an error dialog will appear. The DEFAULT. END file is usually not necessary.

Eudora starts off the dialing process by interpreting the DEFAULT. MOD file. The commands in this file configure the modem.

The DEFAULT.NAV file then takes over to dial the phone number and run commands to reach the terminal server/system user prompt. After reaching the user prompt, the telnet command is run. The telnet command accesses the service being used and, in some cases, establishes the echoless session required by Eudora. In those cases where the telnet command does not disable echo, the srialpop command should be run.

Once the network service is no longer required, the DEFAULT. MID file is executed to reacquire the user prompt. Eudora is then free to close down the connection or acquire another service.

In closing down the dialup connection, Eudora drops the Data Transfer Ready (DTR) signal, which resets a properly configured modem. Eudora also has the option of interpreting commands in the DEFAULT. END file to place the modem on hook and/or any other action.

Note: The execution during the dialup connection may be terminated at any time by clicking the Stop button in the progress window or typing [Esc].

All the dialup files are checked for syntax and variable replacement before the dialup takes place. If a syntax error occurs a dialog appears to notify the user of the navigation file name and line number. The navigation file commands themselves are described in the "Dialup File Command Lines" section.

Creating Your Own Dialup Files

The appropriate dialup files may have been installed in the Scripts directory within your Eudora directory when you installed Eudora. However, if your modem and/or Internet service provider were not included in the installation, you were instructed to install the "default" files (if this happens, please let us know so that we can include your modem and service provider in a future revision). This section outlines the steps you should take to modify the default files to work with your modem/service provider.

To edit any of the four dialup files, simply use a text editor (one is provided within Eudora).

DEFAULT. MOD File

This dialup file is responsible for configuring your modem. The default DEFAULT. MOD file contains general modem configuration commands that all Hayes-compatible modems will respond to. It also contains comments describing the dialup Eudora requirements that need to be met in order to guarantee a stable connection between your PC and modem, and your modem and server.

Note: If these dialup Eudora requirements are not met, Eudora may still work, but you may experience data corruption when sending or receiving messages.

There are five commands that need to be entered into the DEFAULT. MOD file to meet the Eudora dialup requirements. The modem commands are defined in the commands section of your modem reference guide. Enter these five commands as follows:

Note: An explicit "\r" must be placed at the end of each send line if you wish to terminate the line.

1. Enter the command that configures your modem to respond to DTR. When DTR is dropped the modem should reset, drop carrier, and go into command mode. Typically, the modem defaults to ignore DTR. A Hayes-compatible modem uses the command "AT &D2" to configure it to respond to DTR.

   EXAMPLE: send AT &D2\r

2. Enter the command that configures your modem for reliable operation (MNP4 or V.42). If you do not use a reliable mode you risk dropping/altennng characters, thus corrupting incoming as well as outgoing messages. Typically, the appropriate command can be found in the \N section of the modem manual (e.g., \N2).

   EXAMPLE: send AT \N2\r

   Note: Some Internet service providers do not support both V.42 and MNP4. If this is the case with your service provider, find out which reliable mode is supported and then configure your modem accordingly. If you cannot match your modem to your service provider (e.g., your modem supports only V.42 and your service provider supports only MNP4), you may need to disable reliable mode and sacrifice your data integrity.

3. If your modem supports hardware flow control, enter the command that configures your modem for hardware flow control. Flow control is the ability of the modem and PC to stop the data flow before the internal buffers fill up and overflow. The modem may use either hardware or software flow control (software flow control is typically the modem default setting), but hardware is preferred and is strongly recommended at baud rates above 9600. Typical hardware flow control commands are *FL, \Q, and &K.

   EXAMPLE: send AT *FL\r

   If your modem does not support hardware flow control, then you must use software flow control. Software flow control, however, does not work well at speeds above 9600 baud.

   Note: Hardware flow control uses the RTS and CTS signals on the RS-232 cable. The PC and modem can react to these signals much faster than software flow control, which uses a character to stop and a character to start the transmission of characters.

4. If you have set your modem to support hardware flow control (as described in step 3), change the command that sets the Eudora FlowControl variable to Hardware (i.e., "set FlowControl=Hardware"). This command overrides the FlowControl value in the [Dialup] section of the EUDORA.INI file (this feature is only available in version 2.0.2 or later).

   Note: The flow control options for the modem and Eudora must match or you will experience data corruption and/or communication failures. The "set Flow Control =Software" command was inserted into this file so that Eudora matches the default setting of the modem if you do not change it to hardware.

5. Enter the command that fixes the modem baud rate. Many modems adjust the speed to the line speed after the carrier is established. You do not want the modem to change the speed that the PC is expecting. Typical commands are \J0, B0, and \B0.

   EXAMPLE: send AT \J0\r

   Note: Sometimes just selecting hardware flow control will disable baud rate adjust.

DEFAULT.NAV File

This dialup file is responsible for dialing the phone number (via the { DialNumber} variable) and navigating to the system prompt of your system/terminal server. In addition to the DEFAULT. NAV files installed with Eudora, some Internet service providers and system administrators have developed DEFAULT.NAV files that work with Eudora. Contact your Internet service provider or system administrator and ask if they have a navigation script that works with Eudora. If not, it will be necessary to edit the default DEFAULT.NAV file to match the login requirements of your particular Internet service provider.

Note: Prior to editing the default DEFAULT.NAV file you will need to be familiar with all of the available commands and variables. These are defined in the "Dialup File Command Lines" section of this appendix.

The default DEFAULT.NAV file contains a generic dialup script. Prior to editing this script, you will need to know the navigation sequence for getting to the host system prompt. You can accomplish this by dialing into the host system using a standard terminal program that saves your login session, such as the one that comes with Windows ("Terminal"). This will tell you what prompts to expect from the system and what commands to send it. Using the commands and variables at your disposal, edit the navigation sequence accordingly.

Note: An example dialup session and the resulting navigation sequence are provided in the default DEFA ULT.NA V file.

Telnet Command

Once you have edited the navigation sequence of this file, enter the appropriate telnet command or activate one of the three telnet commands that are provided in . this file (to activate a command, simply remove the comment character at the beginning of the command line). The telnet command is required to access the network services once you have logged into your terminal server or system.

Prior to entering/activating the telnet command you will need to know the following:

- Are you logging into a terminal server or UNIX system?
- If logging into a terminal server, what type is it?
- Do you need to run srialpop on the host to establish an echoless connection?

Telnet commands are provided for Annex and Cisco terminal servers. These commands establish the echoless telnet session required by Eudora.

Note: The active telnet command in this dialup file will override the default Eudora telnet command or an existing telnet command in the [Dialup] section of the EUDORA.INI file (this feature is only available in version 2.0.2 or later). See the "EUDORA.INI [Dialup] Settings" section for information on the default telnet command.

An additional telnet command is provided if you are dialing directly into a UNIX system (that is, you get a system prompt instead of a terminal server prompt). This command works in conjunction with the srialpop command to establish an echoless telnet session. Srialpop runs on the UNIX host computer. A source copy of this program (srialpop.sh) was placed in your Eudora directory as part of the installation process.

If you are using this telnet command (or any other telnet command that does not disable echo), activate the "set CRLFProcessing=O," "send exec srialpop\r" and "waitfor %" commands by removing the comment character at the beginning of each command line. This will run srialpop on the host computer and provide for an echoless session.

If you are connecting to a terminal server that is not supported by one of the provided telnet commands, contact your service provider or system administrator to obtain a telnet command that provides an echoless session. If it does not disable echo, then enter it after the srialpop command lines and be sure to activate them.

Note: If you enter a different telnet command in this file, be sure to place a "\ "character directly before the beginning "{" character in a variable field. For example, "set TelnetCommand= stty -echo\ntelnet -r \{System} \{Port}\n."

DEFAULT. MID

This dialup file simply waits for the terminal server/system prompt. The waitfor command in this file should match the waitfor command at the end of the navigation sequence in the DEFAULT.NAV file.

EXAMPLE: waitfor %

DEFAULT. END
This dialup file is normally not required (and maybe deleted). [t irresponsible for resetting the modem if DTR will not. This file contains the standard modem hangup and reset commands for Hayes-compatible modems.

Dialup File Command Lines

The Eudora dialup files are simple text files that can be edited using any text editor (the one provided within Eudora, for example). The command lines themselves are made up of commands, character sequences, delimiters, text string variables, and special characters. These elements are defined below.

Note: Command lines beginning with a '#' or ';' character are comment lines which are not utilized as part of the file. These may contain comments or help text supplied by the script writer. Blank lines are also treated as comment lines.

The maximum string length of a command line is 255 characters. This is the same limit for the string used after variables and special characters are replaced with the appropriate values. Trailing spaces are stripped unless the last space is escaped (i.e., preceded by a '\' character), at which point all trailing spaces up to that point are left in the translation string. All variables and commands are case-insensitive, so you may mix case as you see fit. Character sequences may be case-sensitive, however, depending on the system/terminal server you are connecting to.

Note: Command lines are not automatically terminated with a carriage return or new line, you must add a '\n' and/or %-' character to the end of any command line you wish to end with [Enter] (see the "Special Characters" section).

Commands

The first word in each command line must be a command. The following commands are defined for use in the Eudora dialup files:

*Note: In the examples below, the symbol **<str>** represents the character sequence (see the "Character Sequences" section), the symbol **<c>** represents the delimiter character (see the "Delimiters" section), the symbol **<setting>** represents any of the EUDORA.INI [Dialup] settings (see the "EUDORA.INI [Dialup] Settings" section), and the symbol **<sec>** represents a value in seconds (e.g., 60).*

send <str>	Send the character sequence out the serial port. All input waiting in the serial receive buffer is purged.
waitfor <str>	Do not continue the file until the character sequence is matched. Multiple sequences may be searched if a delimiter is used; however, the delimiter must be used at the beginning of the first sequence and the end of the last sequence. For example, **waitfor <c><str><c><str1><c><str2><c>** allows you to wait for one of three matches. Any non alpha-numeric character may be used as a delimiter (see the "Delimiters" section).
cancelon <str>	If, while executing a **waitfor,** this character sequence is matched, the file is aborted with an error. Multiple matching may occur if a delimiter is used, as described in the waitfor command.
set <setting>=<str>	This command can be used to override one of the [Dialup] settings in the EUDORA.INI file (an example of this is the "set FlowControl=Hardware" command in the DEFAULT. MOD file).
pause <sec>	Wait the specified number of seconds before interpreting the next command.
sendbreak	Send a break signal to the modem.
sendprompt <str>	Prompt the user for input required by the service provider/system that is not a fixed value (such as a timed password). You are then prompted to enter a string that will be sent out to the serial port (with an optional \r\n on the end).
timeout <sec>	Set the **waitfor** timeout to be a specified number of seconds. Shorter timeouts are useful for modem commands, longer ones for waiting for carrier.

Character Sequences

Command line character sequences can be made up of any characters. However, special care must be taken with the characters '{', ' }', and '\', which are used to designate variables and special characters. When used in character strings, these characters must be preceded with a '\' (i.e., '\{', '\}', '\\').

Note: Character sequences may be case-sensitive, depending on the server being connected to.

Delimiters

Delimiters are used to separate character sequences in command lines where more than one character sequence is present. Any non alpha-numeric character may be used as a delimiter. The delimiter serves the 'or' function when placed between character sequences. Additionally, a delimiter must be used at the beginning of the first sequence and the end of the last sequence. For example, in the command line **cancelon|NO DIALTONE|BUSY|NO CARRIER|**, the connection will be canceled if any of three matches are found.

Variables

Although not required, predefine variables can be used in the dialup files. They are enclosed in curly brackets, that is, '{' and ' }', when appearing on command lines. The available variables are defined below.

The following variables are set in the Eudora Configuration dialog with the exception of the password variables, which are set in popup dialogs:

{DialNumber}	Phone number configuration line.
{DialLogin}	Commonly set with the terminal server user name.
{DialPass}	Password associated with the { DialLogin } variable.
{POPLogin}	User name in the POP account configuration line.
{POPPass}	Password associated with the { POPLogin } variable.
{POPHost}	Host portion of the POP account configuration line.
{SMTPHost}	SMTP host configuration line.

The following variables are derived from values in the Options dialog and can be used in the telnet command:

{System}	This is the system you are connecting to.
{Port}	This is the port number of the host where the network service is located.

Special Characters

Special characters can appear at any place in the command line. The available special characters are defined below.

Note: Characters preceded with a '\' character that are not in the following list are simply stripped of the '\'.

\n	A linefeed (ASCII 10).
\r	A carriage return (ASCII 13).
\o -/7	An octal constant, usually one to three characters.
\\	A single backslash character.

When Eudora is communicating with your POP or SMTP server, it is important that they agree on what constitutes a line. The specifications for these two protocols stipulate that a line ends with a carriage return (cr) followed by a linefeed (if). Most UNIX systems translate carriage returns into cr/lf pairs. For this reason, Eudora processes cr/lf pairs to plain carriage returns by default. If your system does not translate carriage returns to cr/lf pairs, or you are running srialpop to establish an echoless session, Eudora's cr/lf processing must be disabled. This can be done by entering the "set CRLFProcessing=O" command in the DEFAULT.NAV file or by editing the [Dialup] section of EUDORA.INI file (refer to these sections for more details).

Echo Canceling

Echo can cause Eudora to become confused, reduce throughput, and cause data to be lost if buffers fill up. Therefore, disabling echo when using Eudora is very important. If your PC has a serial line to a UNIX machine, or if there are modems on your PC and UNIX machine, you can disable echo using a number of methods, two which are described below.

Method 1- The Telnet Command

Some terminal servers allow commands to be run that disable echo to be part of the telnet command. For example, when connecting to an Annex terminal server the DEFAULT.NAV file uses the following command line:

set TelnetCommand=stty -echo\ntelnet -r \{ S ystem } \{ Port }\n

The "stty -echo" command turns off terminal server echo.

Note: When using this method, the DEFA ULT.MID file should be configured to wait for the system prompt.

Method 2- Serial pop

1. Install the srialpop program onto your UNIX system. Source to this is part of the Eudora distribution.
2. Activate/p[ace the following command lines in the DEFAULT.NAV file.

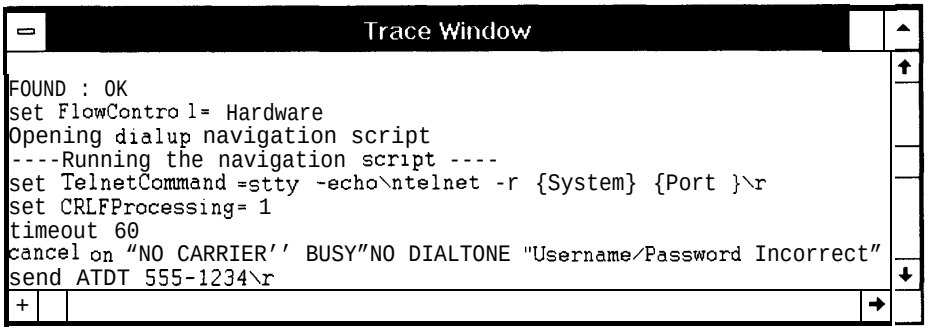
```
set CRLFProcessing=0
send exec srialpop\r
waitfor %
```

Note: When using this method, use a "waitfor %" command in the DEFA ULT.MID file.

Dialup File Troubleshooting

Eudora has a way to help users troubleshoot dialup files – the Trace Window. This window follows what Eudora is sending, expecting, and the characters returned to Eudora while it is waiting for a pattern match. This window is enabled in the Options dialog (Dialup).

When enabled, the Trace Window is opened automatically at the beginning of the dialup session. If there is an error during the dialup process, the window displays the source of the error. You can then explore the appropriate corrective action.



Example Trace Window

In addition to using the Trace Window when troubleshooting dialup Eudora, a few of the typical problems encountered when attempting to connect to your terminal server/system for the first time are described below (symptoms), along with the probable corrective action for each:

Symptom	Corrective Action
Eudora times out at the telnet command when sending or checking mail (it has never worked).	You may have a problem with carriage return (cr)/linefeed (if) processing. By default, Eudora converts cr/lf character pairs into cr. This is because many telnet programs convert cr into a cr/lf pair. If your telnet program does not convert cr to cr/lf, then you need to disable the cr/lf processing done by Eudora. To do this, add the command "set CRLFProcessing=O" to the beginning of the navigation sequence in your DEFAULT.NAV file.
Eudora has problems talking to your modem at speeds higher than 9600 baud, even with hardware flow control.	Standard serial ports that come with most PCs do not operate well above baud rates of 9600 baud. You may need a high speed serial card with 16550 UARTS.

Symptom	Corrective Action
Eudora can send small messages but not large messages.	Chances are you have not been successful in disabling echo on your telnet session. If echo is not disabled, Eudora will get very confused. Edit your DEFAULT.NAV file and enable the commands that run srialpop (see the "Echo Canceling" section). This will establish the echoless connection that Eudora requires.

Eudora can receive mail but times out when sending mail, even small messages.	Chances are the flow control between your modem and your PC, or the flow control of your service providers modems and systems is not setup correctly. This problem is very difficult to diagnose and fix. If you have created your own DEFAULT. MOD script, then recheck it and verify that the FlowControl command matches the modem configuration (hardware or software). Refer to steps 3 and 4 of the DEFAULT. MOD section of this appendix for more details. If they match, it may be a problem at your service provider. Contact your Eudora technical support representative for assistance in troubleshooting this problem.
Mail can be retrieved via POP but cannot be sent via SMTP.	Your telnet command probably ends with a cr/lf combination ("\r\n"). Remove the line feed ("\n") from the telnet command line.
Eudora times out after sending or receiving mail (it has never worked).	There is probably an error in your DEFAULT. MID file and it may be waiting for the wrong system prompt. Verify that the system prompt symbol in the "waitfor (system prompt)" command matches your server system prompt. Also verify that it matches the last line of the navigation sequence in your DEFAULT.NAV file.
When sending mail, SMTP complains that your HELO command is invalid and must be a fully qualified host.	Edit the EUDORA.INI file and add the line SMTPHELOString=(your fully qualified host name) in the [Dialup] section.

Sympton	Corrective Action
Eudora displays the following error when you try to check mail: **"Serial Overrun on Rx"**	Serial overruns are usually caused by running your modem at a speed greater then **9600** bps when you don't have a 16550 UART in your PC. The regular UART (8250) only has a one byte buffer. A serial overrun occurs when the buffer is filled up and more bytes come in. The 16550 UART has a 16 byte buffer and should never overrun. It is also strongly recommended to get a serial driver other than the one that comes with Windows. There are several drivers on the internet which work better at higher speeds. The Cybercom drivers on ftp.qualcomm.com in the quest/windows/utils directory work well. If you do have a 16550 UART then the problem could be your Windows com driver.
Eudora displays the following error when you try to check or send mail: **"Serial Framing Error"**	This error indicates that flow control is not set up correctly with your modem. Hardware **flow** control is recommended, and the initialization strings sent to the modem in the serial. mod file should set it up for hardware flow control. Also put the modem into reliable mode, using LAPM or MNP4 error correction. If you are going to use software flow control (Xon/Xoff), then it is only reliable up to 9600 bps. Also, for speeds over 9600, make sure the the modem/serial port has a 16550 UART.

Fine Tuning Dialup Eudora

Once you have successfully modified the default dialup files so that Eudora works with your system, there are a couple of adjustments that can be made to fine tune Eudora for the best possible dialup connection performance. These are as follows:

1. **Enable compression –** Many modems allow for data to be compressed while traveling over the phone line. Enabling data compression can dramatically increase the speed at which large messages are transmitted and received. Data compression is available in MNP5 or V.42 protocols. To enable data compression, enter the appropriate command in the DEFAULT. MOD file. Typical Hayes commands which enable data compression are %C 1, %C3, and *DC 1. Check your modem reference manual for the command that applies to your modem.

2. **Delete the DEFAULT. END file –** This file is required for systems that need help in shutting down a modem. If you have DTR configured correctly, then this file is not required. You will save approximately 5 seconds during shutdown if you delete this file.

EUDORA.INI [Dialup] Settings

The following settings can be entered into the [Dialup] section of the EUDORA.INI file (you will have to create this section if it does not exist). In general, the default parameters are what you want, with the exception of "BaudRate," which you may want to increase to at least twice the expected line speed to get the best performance out of your modem.

Note: The EUDORA.INI [Dialup] settings can be modified in the dialup files by entering the set command followed by the setting value (e.g., "set CRLFProcessing=0").

ATSendDelay	The delay between sending characters in a modem AT command (in milliseconds). The default is 100.
BaudRate	Values support in this field; 2400,9600, 19200,38400, 56000. The default is 9600.
BreakTime	Length of modem break command (in milliseconds). The default is 150.

Busy Retries	The number of times that the phone will be redialed after receiving a busy signal.
CornPortName	Sets port name “corn l“, “com2”, . . . The default is com2.
CRLFProcessing	Enabled by default, setting this to zero will inhibit the translation of \r\n to \r on output and \r\r to \r on input.
DataBits	4 to 8 data bits. 8 bits is the default.
DialupTimeout	The default dialup timeout is 60 seconds. You may change the default with this variable. You may change the timeout during a script run with the “timeout” command as well.
EndScript	The name of the script file that closes the modem connection.
FlowControl	Hardware or software. Hardware is the default.
MiddleScript	The name of the script file that closes the telnet connection.
ModemConfScript	The name of the script file that does the modem configuration
Parity	None, mark, even, odd. None is the default.
SMTPHELOString	String to send as the parameter of the SMTP HELO command. This should only be set if your SMTP server fails to recognize HELO.
StartupScript	The name of the file that does the dialup and navigation.
StopBits	1, 1.5, or 2. 1 is the default.
TelnetCommand	Telnet command used to contact network servers (SMTP, POP, etc.). Eudora’s default telnet command is: TelnetCommand = telnet{system}{port}\r\n